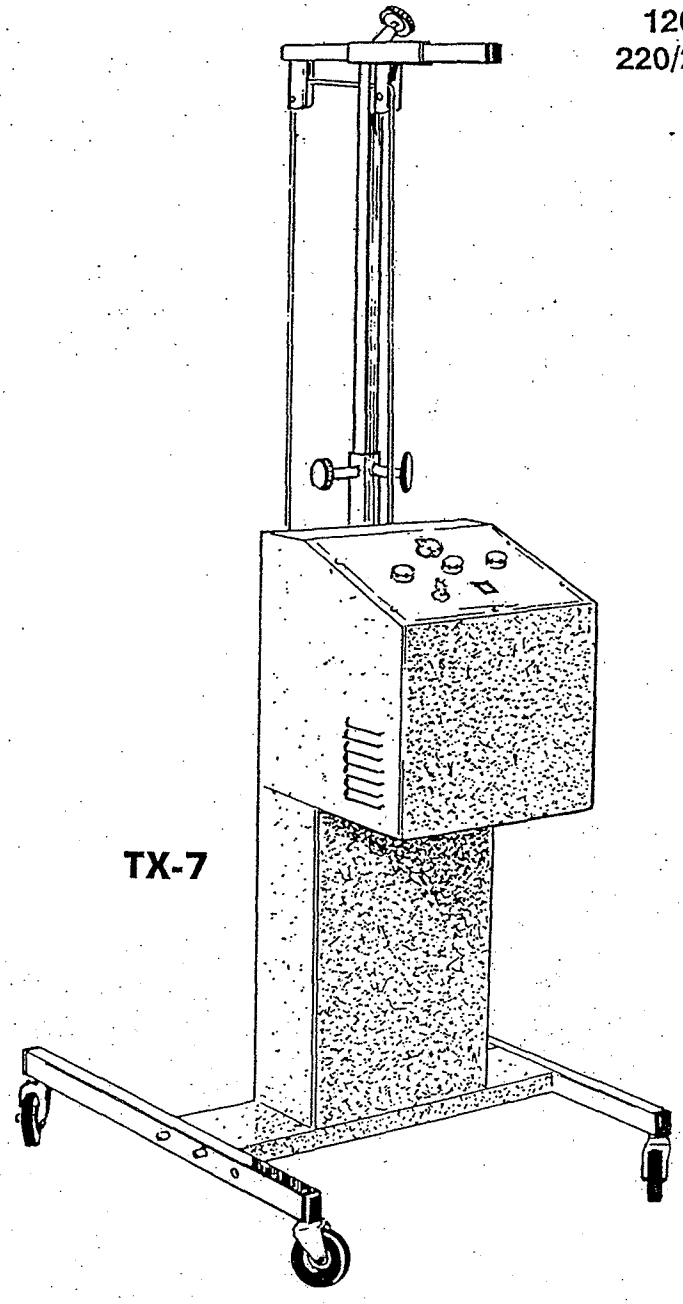
TRACTION UNITS

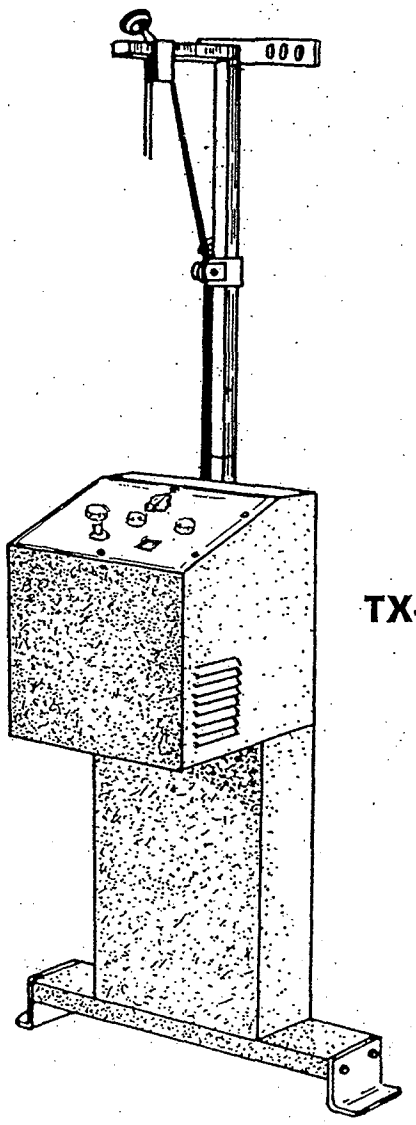
INSTRUCTIONS FOR USE AND OPERATION OF

TX-7 MOBILE TRACTION UNIT
TX-8 STATIONARY TRACTION UNIT

120 VOLT
220/240 VOLT



TX-7



TX-8

CHATTANOOGA
GROUP, INC.

P.N. 74121 REV. C 02/94

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CHATTANOOGA GROUP, INC.

12 Month Warranty

Chattanooga Group, Inc. ("Company") warrants that the tx® Traction Units, Models TX-7 and TX-8 ("Product") are free of defects in material and workmanship.

This warranty shall remain in effect for one (1) year from the date of original consumer purchase of this Product and extends to any owner of the Product during the warranty period. If this Product fails to function during the one year warranty period because of a defect in material and workmanship, Company or the selling dealer will replace or repair this Product without charge within a period of 30 days from the date on which the defective Product is returned to the Company or the dealer. Company or the dealer will ship the replacement or the repaired Product to the consumer's residence.

THIS WARRANTY DOES NOT COVER:

1. Replacement parts or labor furnished by anyone other than the Company, the dealer or an approved Company service agent.
2. Defects or damage caused by labor furnished by someone other than Company, the dealer or an approved Company service agent.
3. Any malfunction or failure in the Product while it is in the possession of the owner during the warranty period if the malfunction or failure is not caused by a defect in material and workmanship or if the malfunction or failure is caused by unreasonable use, including the failure to provide reasonable and necessary maintenance.

COMPANY SHALL NOT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES TO PROPERTY OR BUSINESS.

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

TO OBTAIN SERVICE from Company or the selling dealer under this warranty, the owner must do or abide by the following:

1. A written claim must be made within the warranty period to Company or the selling dealer. If the claim is made to the Company, the written claim should be sent to: 4717 Adams Rd./P.O.Box 489, Hixson, TN 37343-0489. Phone: (800)-592-7329.
2. The Product must be returned to Company or the selling dealer by the owner.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

The Company does not authorize any person or representative to create for it any other obligation or liability in connection with the sale of the Product. Any representation or agreement not contained in the warranty shall be void and of no agreement.

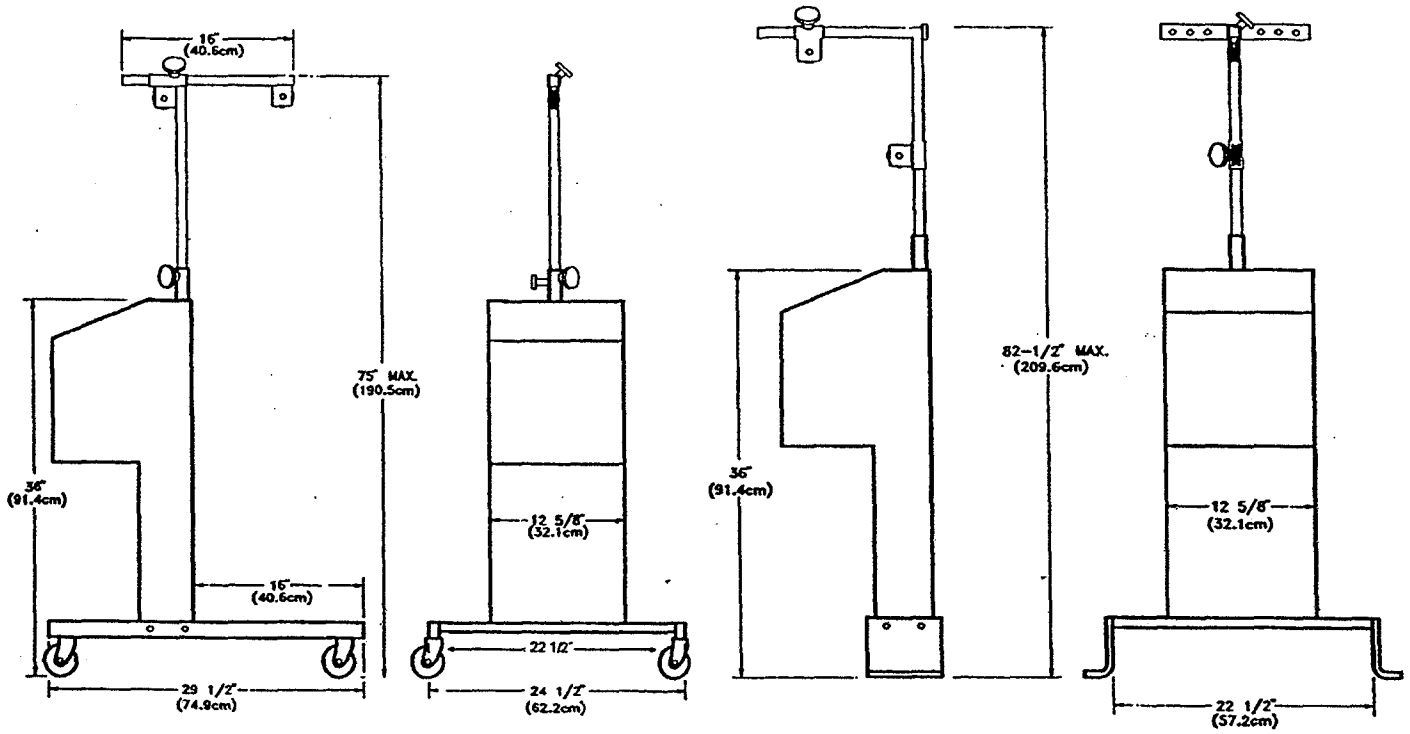
FOREWORD

This manual has been prepared for the owners and operators of the TX® Traction Units, Models TX-7 and TX-8. It contains general instructions on operations, precautions, maintenance and parts information. To obtain maximum life and efficiency from your TX® Traction Unit, and to aid in its proper operation, read and understand this manual thoroughly and follow all instructions before operation. The specifications put forth in this manual were in effect at the time of publication. However, owing to Chattanooga Group's policy of continuous improvement, changes to these specifications may be made at any time without obligation on the part of Chattanooga Group, Inc. The unit you have selected may have all or only part of the features shown, depending upon the model of your choice.

PRECAUTIONARY INSTRUCTIONS

1. Read, understand and practice the Precautionary and Operating Instructions found in this manual. Know the limitations and hazards associated with the TX®Traction Unit.
2. **GROUNDING** the TX® Unit: Make certain that the unit is electrically grounded by connecting only to a grounded electrical service receptacle conforming to the applicable national and local electrical code.
3. Always tighten hand adjustment knobs securely to avoid slipping.
4. Follow all cautionary instructions indicated on decals located on the units.
5. Federal Law restricts this device to sale by, or on the order of, a physician or licensed practioner.
6. Do not attempt to raise or lower table while administering traction.
7. **DO NOT USE IN THE PRESENCE OF FLAMMABLE ANESTHETICS.**

GENERAL SPECIFICATIONS



TX-7 **TX-8**

SPECIFICATION	TX-7	TX-8
Traction Control	Analog	Analog
Traction Capacity - Pounds	0 to 200	0 to 200
Traction Capacity - Kilograms	90.8	90.8
Shipping Weight - Pounds	95	90
Shipping Weight - Kilograms	43.1	40.9
Domestic Power	120V, 60Hz, 5A	120V, 60Hz, 5A
Export Power	220/240V, 50Hz, 2.5A	220/240V, 50Hz, 2.5A

INSTALLATION PROCEDURES

Remove all packaging materials. The unit should be plugged into either a 120 Volt AC or 220/240 Volt AC outlet, depending upon the serial decal description. **DO NOT ATTEMPT TO USE DIRECT CURRENT.**

TX-7: TOOLS NEEDED FOR INSTALLATION:
(1) 9/16" Open-End Wrench - Not Furnished

1. The legs must be assembled to the unit. The long portion extends towards the rear. Refer to Figure 1.

CAUTION: If legs are installed backwards, unit will turn over when traction is applied.

INSTALLATION PROCEDURES (cont.)

TX-7 (cont.)

2. Raise one side of the unit and bolt on the leg with the long end to the rear of the unit. Repeat the procedure for the other side. Refer to Figure 1.
3. Install top adjustment bar. The top adjustment bar extends in the direction of the long end of the legs. Refer to Figure 2.

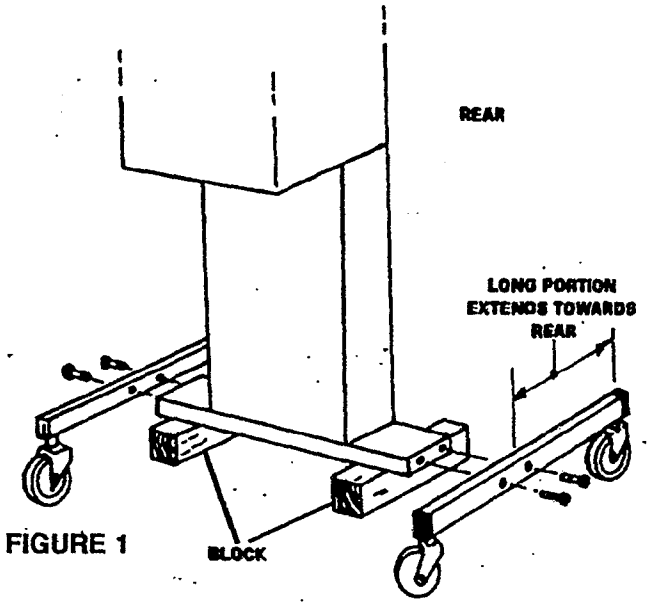


FIGURE 1

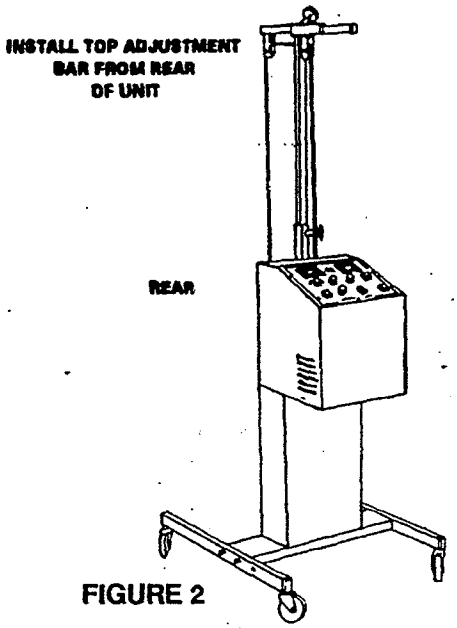


FIGURE 2

4. Feed rope through pulleys and install line clamp. Refer to Figure 3.

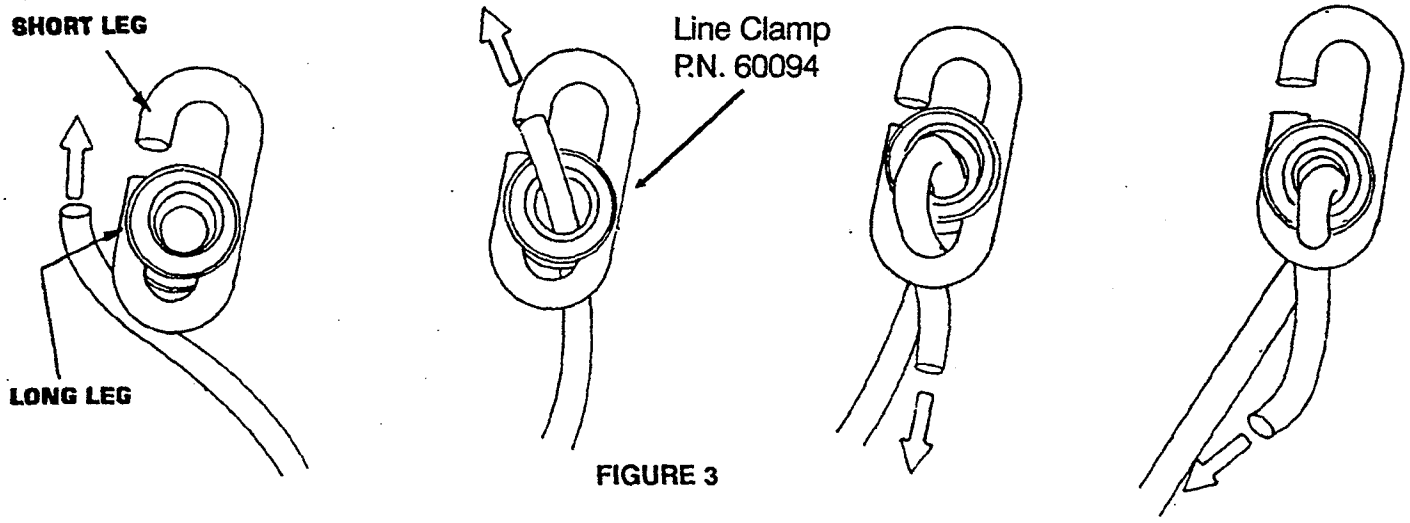


FIGURE 3

TX-8: TOOLS NEEDED FOR INSTALLATION:
(1) 7/16" Open-End Wrench - Not Furnished
(1) 9/16" Open-End Wrench - Not Furnished

1. Install floor mounting brackets supplied with unit - Refer to Figures 4 and 5.
2. Install top pulley tube assembly. Assembly has mounting plate attached for wall mounting.
3. Mounting plates attach to the floor and wall by anchor bolts in concrete or by lag screws, depending on the surface. (Anchor bolts or lag screws are not supplied with the unit.)

INSTALLATION PROCEDURES (cont.)

TX-8 (cont.)

4. Feed rope through pulleys on the top adjustment bar. Check to see that rope pulls freely.
5. Install line clamp to rope (Fig. 3).

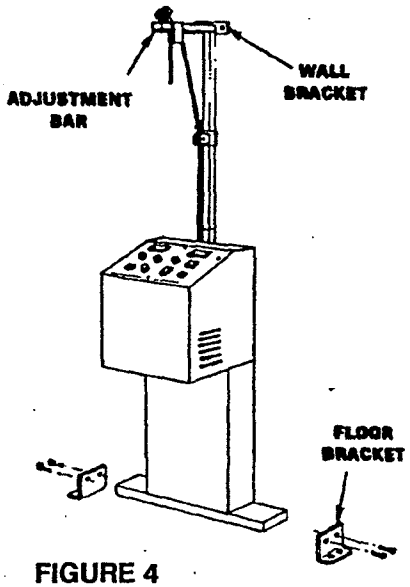


FIGURE 4

For equipment intended to be operated in the United Kingdom, 220/240V, 50Hz, the Mains lead should be fitted with a sleeved 13Amp, BS-approved mains plug, fused 5 amps,and wired as follows:

Brown: Live
Blue: Neutral
Green/Yellow: Earth

The electrical installation of the room in which the equipment is to be used should comply with the regulations for the Electrical Equipment of Buildings, published by the Institution of Electrical Engineers.

Symbols(Where applicable):

⚠ ATTENTION: Consult accompanying documents.

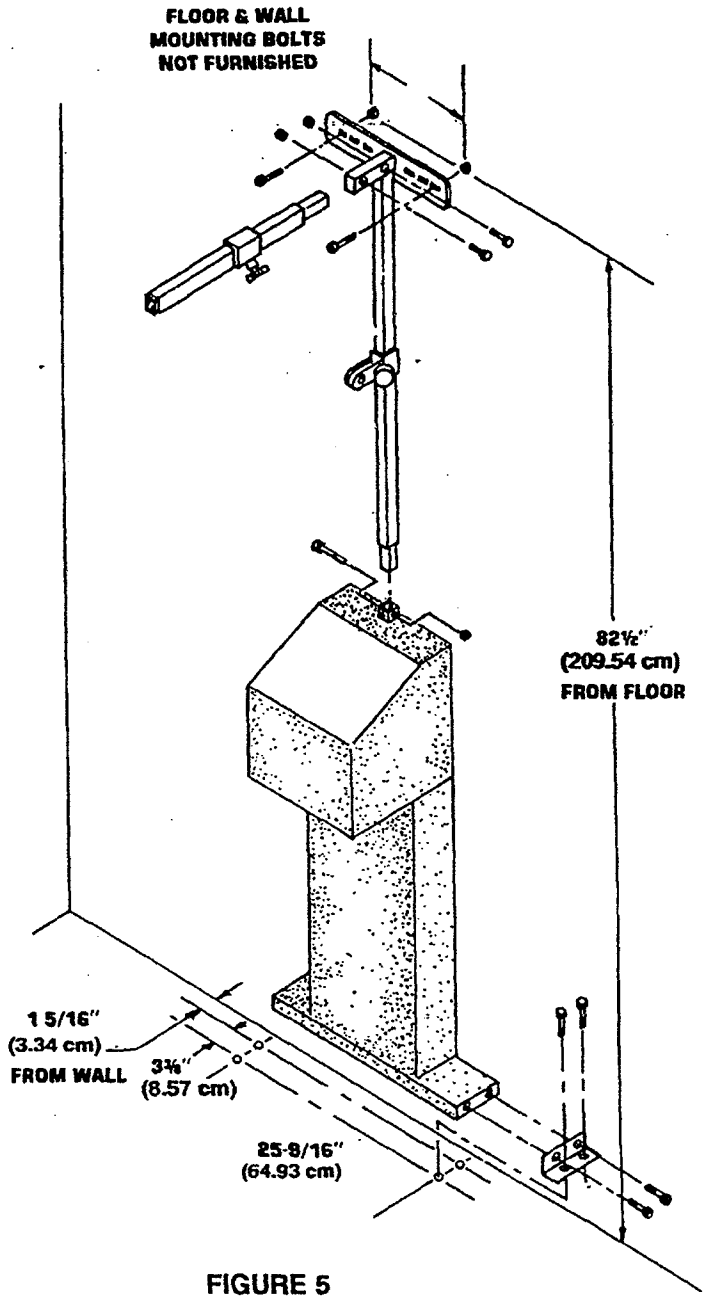
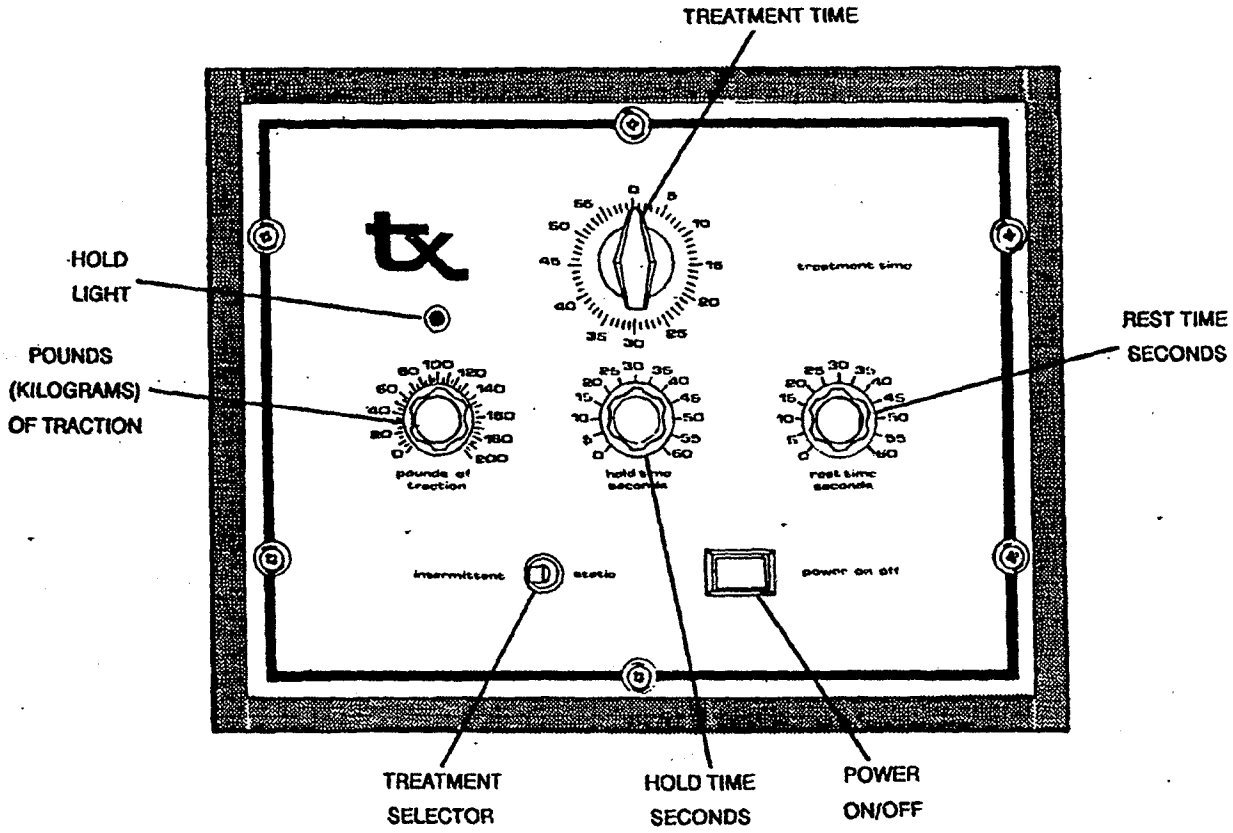


FIGURE 5

TYPE B Equipment: " An adequate degree of protection against electric shock is provided particularly regarding allowable leakage currents and reliability of the protective earth connection."

OPERATING CONTROLS



POWER ON/OFF: Push button in to connect Mains Power. Button should illuminate.
TREATMENT SELECTOR: Two modes of treatment:

INTERMITTENT STATIC

POUNDS(KILOGRAMS) of TRACTION: 0 to 200 Pounds(0 to 90 Kg) of traction.
HOLD TIME SECONDS: Hold time selection from 0 to 60 seconds.
REST TIME SECONDS: Rest time selection is from 0 to 60 seconds.
TREATMENT TIME MINUTES: Selector switch programs treatment time from zero(0) to sixty(60) minutes..
HOLD LED: Illuminates when selected pounds/Kilograms have been reached.

NOTE: Rest time begins when Hold cycle releases.

OPERATING PROCEDURES

The following procedures are applicable to both Models, the TX-7 and the TX-8.

To begin operation of the unit, use the following procedures:

1. Pull the traction rope out of the unit until the **GREEN** mark shows.

2 Secure the appropriate attachment to the patient before proceding with the traction set-up. Make sure patient is comfortable with fit. If a Chattanooga Pelvic Belt is used, it should be applied over bare skin.

3. Check to see that adjustment knobs on vertical(upright) and horizontal bar are tightened securely.

4. Release clamp and pull rope, **REMOVING ALL SLACK.**
This is **VERY IMPORTANT**, because the rope has a limited distance of travel.

5. **Give the patient control cord to the patient (pressing the Red Button will stop traction cycle).**

6. Set the desired amount of traction - 0 to 200 pounds(0 to 90 Kgs).

7. Set the desired HOLD TIME - 0 to 60 seconds.

8. Set the desired REST TIME - 0 to 60 seconds.

9. Place SELECTOR switch in the MODE of traction to be used.

10. Set desired TREATMENT TIME - 0 to 60 minutes.

NOTE: To properly set Treatment Time, turn timer dial **PAST** required time, then bring dial back to desired setting.

11. Press the Power ON button.

12. After Power ON button is pressed, the patient should be asked to activate the patient switch to check for proper operation. Re-start the unit and proceed with the treatment. This will make the patient and the physical therapist aware of this important safety feature.

NOTE: If for any reason the unit should be stopped, DO NOT ATTEMPT TO RESTART FOR 20 SECONDS.

13. Watch the unit for three or four cycles and re-adjust halter or belts if required.

14. The TX® unit will automatically stop at the end of treatment time.

MAINTENANCE

The TX-7 and TX-8 Traction Units require very little maintenance to keep them operating efficiently. The accompanying table should be wiped clean with a damp cloth.
Periodically check for Traction cord fraying, or wear of power cord. If replacement of the Traction cord is necessary, the procedure is as follows:

A) Remove back panel from unit.
B) Un-tie old Traction cord from cylinder.
C) Feed new cord through opening in top of cabinet and tie securely to cylinder.

If unit is located in an area where it is subjected to extreme amounts of moisture or humidity, the pulleys should be lubricated periodically with a light oil. It is recommended that all Chattanooga Corporation TX-7 and TX-8 Traction Units be re-calibrated annually by an authorized servicing dealer or at the factory. Re-calibration is also recommended after the replacement or repair of any major component.
If some problem should occur with these units, contact the factory at (800)592-7329.

TROUBLE SHOOTING

PROBLEM	POSSIBLE CAUSE
1. Unit is dead, No Lights, Compressor not running.	Unit not properly plugged in. Fuse(2ea.) blown. Defective ON/OFF switch.
2. Unit lights on, Compressor not running.	Compressor defective.
3. Unit will not pull beyond a specific lbs.(Kgs) level, usually 30-50lbs. (13-1/2 to 22-1/2 Kgs.).Hold light will not come on.	Compressor. Compressor hose. Air leak.
4. Unit is dead but compressor running.	Panel defective.
5. Hold and/or Rest times inaccurate. Note: Rest time starts at end of hold cycle.	Panel out of calibration or defective.
6. Unit is not smooth on take-up or release.	Cylinder sticking or rope binding.
7. Pull incorrect.	Panel out of calibration or defective. Rope binding or off pulley. Rope not fully extended
8. In the Intermittent mode of operation, unit will pull once, release, then will not pull again.	Panel out of calibration or defective. Check zero adjust.

CALIBRATION PROCEDURE
Models TX-7 and TX-8

NOTE: This procedure is to be used to calibrate TXE-7 and TXF-7 units which use the Ametek pressure transducer.

EQUIPMENT REQUIRED

1. Stopwatch with at least 1/10 second timing resolution.
2. Known weights of approximately 25 lbs., 50 lbs., 100 lbs. and 200 lbs. and/or a test stand with a digital strain gauge able to measure up to 200lbs. with 0.1 pound resolution.

PRE-CALIBRATION SETUP

1. Set the MODE SWITCH to STATIC.
2. Set the HOLD TIME control and the REST TIME control on 10 seconds.
3. Zero Adjust: rotate trimpot R5 on transducer adapter board fully clockwise. (Only on previously uncalibrated units.)
4. Span Adjust: rotate trimpot R13 on transducer adapter board fully counter-clockwise. Clockwise rotation increases pull. (Only on previously uncalibrated units.)
5. Hold Time Adjust: rotate trimpot R17 on main pc board to center position. Counterclockwise rotation increases Hold Time. (Only on previously uncalibrated units.)

CALIBRATION

Turn on TIMER and POWER switch.

1. Zero Pull Adjust: Set Traction Tension control exactly to the zero mark. (Not fully counter-clockwise) Select STATIC Mode of treatment. With no weight or force on rope adjust trimpot R5 on transducer adapter board until HOLD LED just barely turns on or flickers.
2. Pull Adjust: To calibrate entire unit, select A. To calibrate a panel in a test stand, select B.

   A. Set Traction Tension control exactly to weight of known weight. (Approximately 50 lbs.) Change the MODE SWITCH to INTERMITTENT. Attach known weight (50 lbs.) to unit, with weight lying on floor or support and about 1 inch of slack rope. Make sure that cylinder is in the extended position by pulling on the rope until it will not move. Turn unit on and let it cycle between HOLD and REST time. As the unit enters the hold cycle, turn the span adjust trimpot R13 on transducer adapter board clockwise until the unit just barely lifts the standard weight. Let the unit cycle between HOLD and REST times to verify that it just picks up the weight. Also check the calibration of the unit at 25 lbs. (2 lbs.), 100 lbs. (5 lbs.) and 200 lbs. (10 lbs.).

   B. Connect panel to test stand. Set Traction Tension control exactly to 50 lbs. Change the MODE SWITCH to INTERMITTENT. Turn unit on and let it cycle between HOLD and REST time. As the unit enters the hold cycle, turn the span adjust trimpot R13 on transducer adapter board clockwise until the strain gauge readout indicates 50 lbs. Let the unit cycle between HOLD and REST times to verify that the test stand is reading 50 lbs. Also check the calibration of the unit at 25 lbs. (2 lbs.), 100 lbs. (5 lbs.) and 200 lbs. (10 lbs.).

3. Hold Time Adjust: Set Hold and Rest time controls to 10 seconds. Set the MODE SWITCH to INTERMITTENT and adjust Hold Time trimpot R17 on main pc board. CCW rotation increases the Hold time. Check the calibration of the REST TIME control at 10 seconds. It should not be less than 10 seconds. Check the calibration of the HOLD TIME control at 10 seconds 1 seconds, 30 seconds 2 seconds, and 60 seconds 4 seconds.

   NOTE: The HOLD time is the period of time when the unit has reached the set poundage and the HOLD time LED is on. (The HOLD time LED is mounted above the Pounds of Traction Control on the front panel.) The REST time period starts when the HOLD time period ends; the HOLD time LED turns off and the traction pull starts to decrease toward zero. The REST time period ends when the unit starts to pull again. The actual REST time period is equal to the time set on the REST TIME control plus 4 seconds.

4. Patient Switch Operation: Attach known weight to rope and set Pounds of Traction control greater than known weight. Select STATIC mode of operation and set in approximately 10 minutes of Treatment Time. The unit should lift the weight off of the floor. Depress the red button on the Patient Switch and the weight will return to the floor.

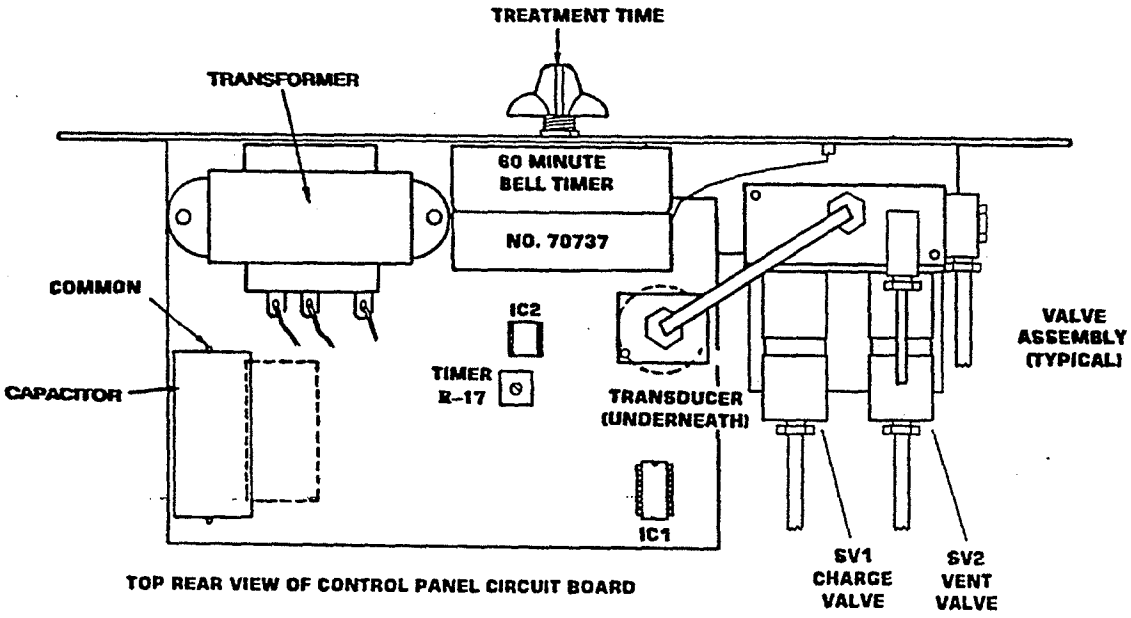
5. Treatment Timer Test: Turn treatment timer past 10 then set it on approximately 1 minute. Make sure that timer shuts unit off when it runs down to zero.

6. Regulatory Tests

   A. Hi-Pot Test

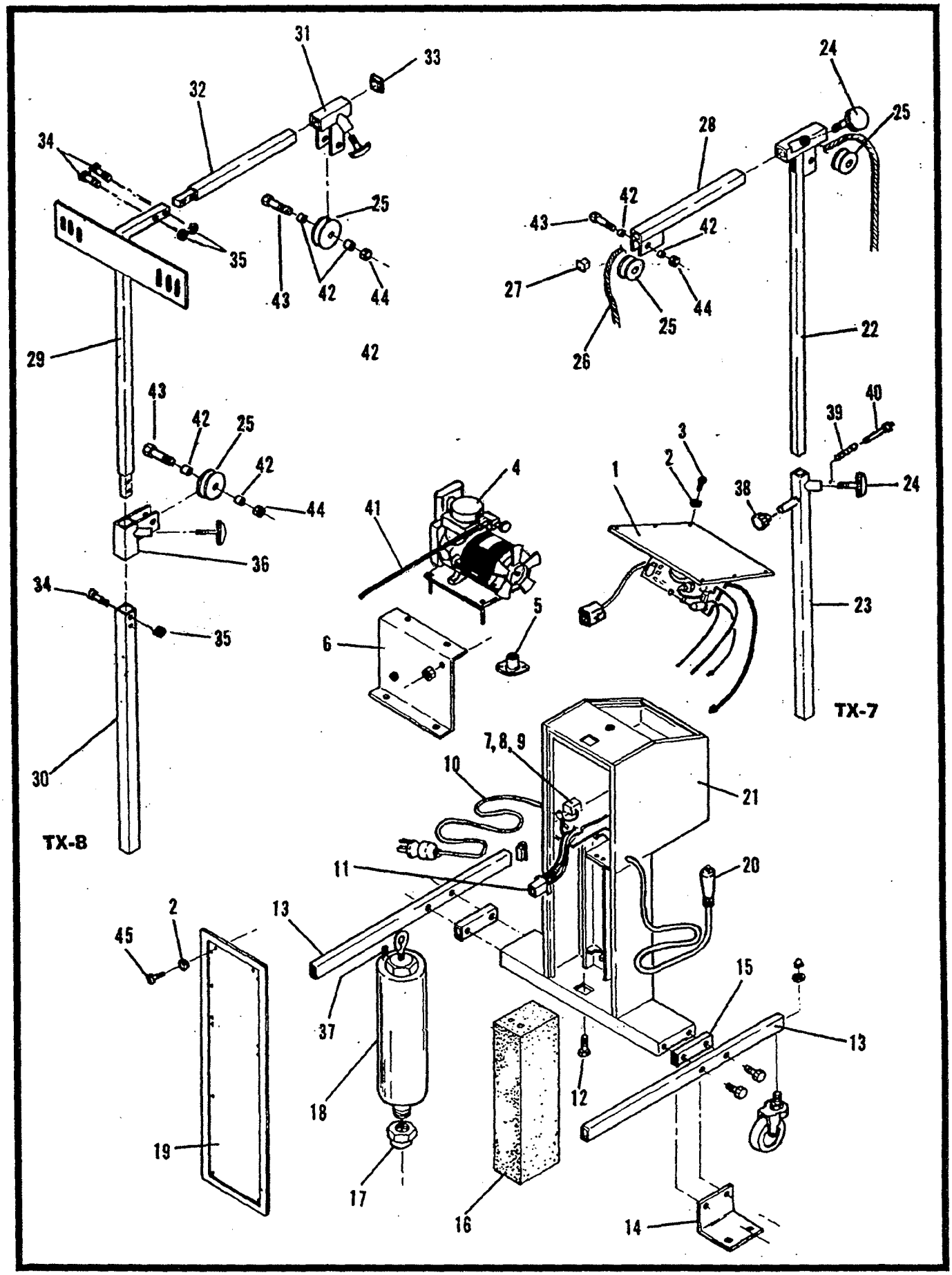
   B. Ground Resistance Test

   C. Leakage Current Test



TOP REAR VIEW OF CONTROL PANEL CIRCUIT BOARD

PARTS DRAWING - MODELS TX-7 and TX-8



PARTS LIST - MODELS TX-7 and TX-8

ITEM	PART NO.	DESCRIPTION	QYT.
1.	71683	CONTROL PANEL, Pounds, 120V, Calibrated	1
	73300	CONTROL PANEL, Kilograms, 220/240V, Calibrated	1
2.	60079	WASHER	6
3.	61661	SCREW,#10 x 5/8, Fl. Hd. Phil. Plt.	6
4.	63066	COMPRESSOR, w/Plate, 120V	1
	63063	COMPRESSOR,w/Plate, 220/240V	1
5.	60660	COMPRESOR MOUNT COLLAR	4
	60748	MOTOR MOUNTS #106PD-3	4
6.	22874	COMPRESSOR COVER	1
7.	72732	FUSE CARRIER, 120V	1
8.	72734	FUSE HOLDER, 120V	1
9.	60087	FUSE, 5 Amp, 120V	1
10.	60149	POWER CORD, 120V	1
	60662	CORD SET, 220/240V	1
11.	71098	WIRING HARNESS, 120V	1
	73516	WIRING HARNESS, 220/240V	1
12.	60839	SCREW, 1/2-13 X 3/4 Hex	1
13.	22908	LEG ASSEMBLY, w/Casters(TX-7)	2
	21259	3" Caster	4
	60634	BRAKE KIT	4
	21747	CAP NUT	4
	21402	WASHER	4
	22884	LEG	2
	60009	PLASTIC PLUG	4
14.	63031	FLOOR MOUNTING BRACKET(TX-8)	2
15.	60936	SHIM(Includes Hardware)(Optional)	2
16.	60114	MUFFLER	1
18.	60664	CYLINDER	1
19.	21917	PANEL BACK, TX STD. w/MOLDING	1
20.	60081	PATIENT CORD	1
21.	22907	CABINET	1
22.	22911	UPPER VERTICAL TUBE(TX-7)(Includes Hardware)	1
23.	22910	LOWER VERTICAL TUBE(TX-7)(Includes Hardware)	1
24.	60313	LOCKING KNOB	1
25.	60310	PULLEY	1
26.	60093	ROPE	1

PARTS LIST(cont.)

ITEM	PART NO.	DESCRIPTION	QTY.
27.	60699	PLUG	
28.	22912	HORIZONTAL BAR(TX-7)(Includes Hardware)	1
29	63036	UPPER VERTICAL TUBE(TX-8)	1
30.	63033	LOWER VERTICAL TUBE(TX-8)	1
31.	60309	UPPER PULLEY ASSEMBLY(TX-8)	1
32.	63042	HORIZONTAL BAR(TX-8)(Includes Hardware)	1
33.	60850	PLASTIC PLUG	1
34.	60822	SCREW, 1/4-20 x 1-3/4 Hx. Hd. Cap Pl.	3
35.	70208	NUT, 1/4-20 ESNA	3
36	63049	SLIDE PULLEY ASSEMBLY(TX-8)(Includes Hardware)	1
	63047	PULLEY BRACKET	1
37.	60101	CYLINDER FITTING	1
38.	60737	KNOB, PLUNGER	1
39.	60371	SPRING, PLATED	1
40.	60370	PLUNGER	1
41.	60700	COMPRESSOR HOSE	1
42.	61937	BUSHING(per unit)	2
43.	60312	SHOULDER BOLT(per unit)	1
44.	63985	LOCKNUT(per unit)	1
45.	61671	SCREW, #10 x 5/8, Hx. Hd. S/M Plt.	8

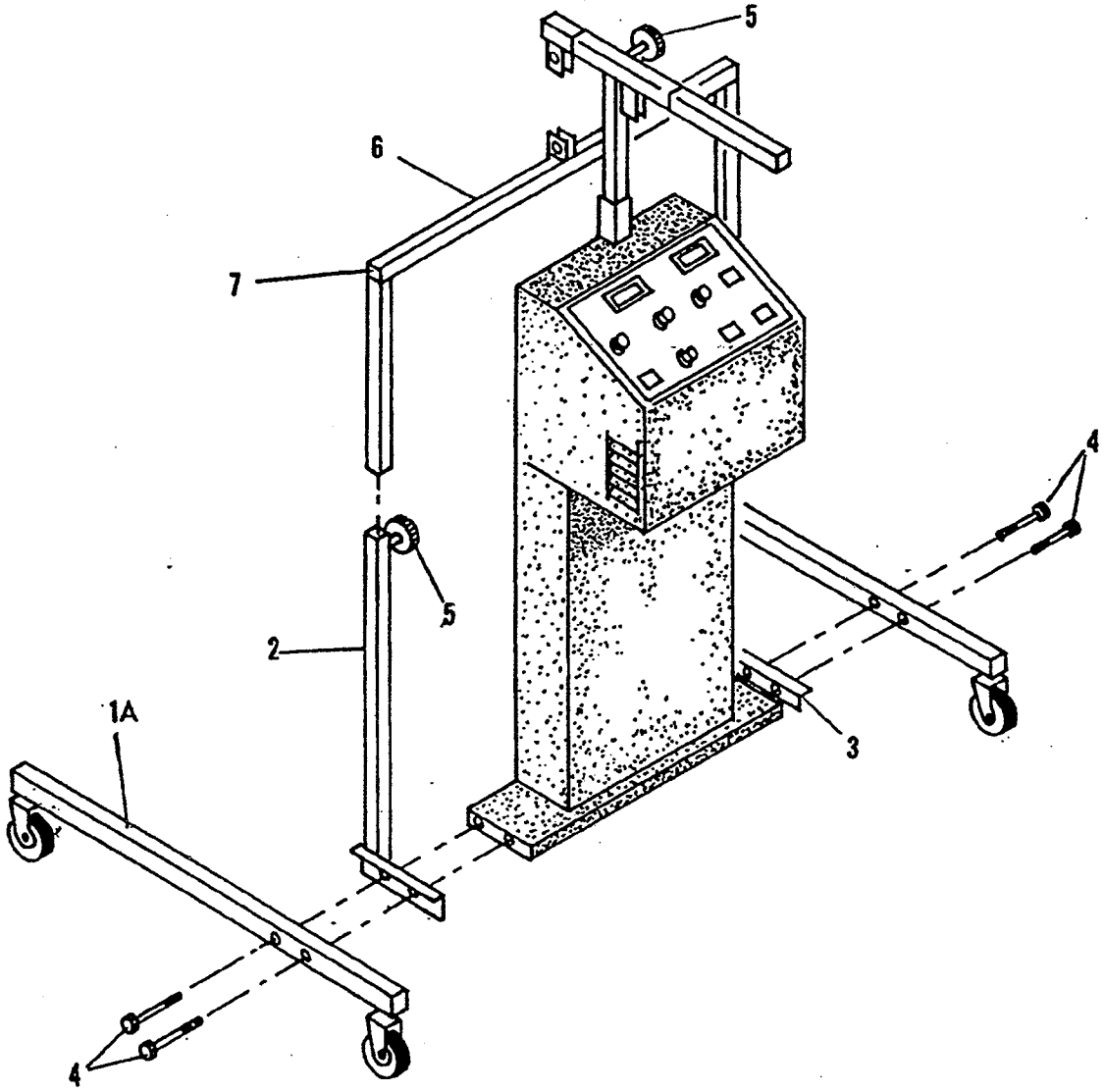
NOT SHOWN:

70147	TRANSFORMER(120 volt)	1
70745	TRANSFORMER(220/240 volt)	1
70095	FUSE, F2 3/10 A Slo-Blo(120 volt)	1
71766	FUSE, F2, 250ma, Anti-Surge(220/240 volt)	2

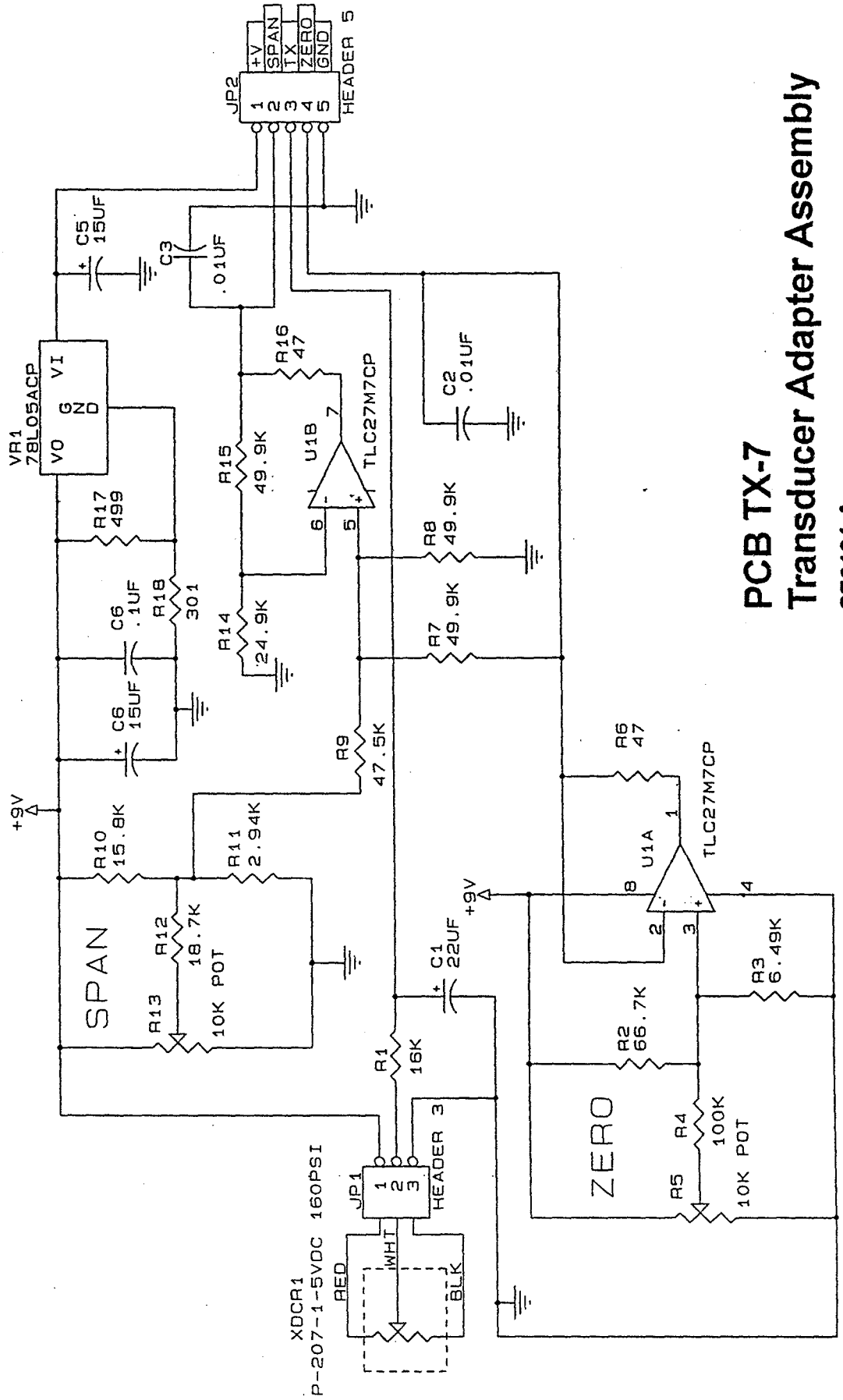
For 220/240 volt units:

83255	RECEPTACLE, Double Fuse Type	1
73426	FUSE CARRIER	2
71932	FUSE, 2.5A, Anti-Surge	2

TXL-17 ACCESSORY STAND
(18" to 30" HEIGHT BED FRAMES)



Ref.	Part No.	Description	Qty.
1A	22908	Leg Assembly(TX-1)(w/Casters)	2
2	61964	Lower Tube Assembly(Left)	1
3	61965	Lower Tube Assembly(Right)	1
4	60831	Bolt	4
5	60313	Knob	2
6	61966	Top Frame Assembly	1
	63964	Pulley Bracket	1
	60310	Pulley	1
	61937	Bushing	2
	60312	Shoulder Bolt	1
	63985	Locknut	1
	63964	Screw	1
	21387	Washer	2
	63983	Nut	1
7	60697	Plug	4


PCB TX-7
Transducer Adapter Assembly
S76191 A
JP2
+V
SPAN
TX
ZERO
GND
HEADER 5
C5 15UF
C3 .01UF
C2 .01UF
VR1 78L05ACP
VO GND VI
R17 499
R18 301
C6 .1UF
C6 15UF
R16 47
R15 49.9K
R14 24.9K
U1B TLC27M7CP
R8 49.9K
R7 49.9K
R9 47.5K
+9V
R10 15.8K
R11 2.94K
SPAN
R12 18.7K
R13 10K POT
C1 22UF
R1 16K
JP1
HEADER 3
XDCR1
P-207-1-5VDC 160PSI
RED
WHT
BLK
R6 47
U1A TLC27M7CP
R2 66.7K
R3 6.49K
ZERO
R4 100K
R5 10K POT

REMOVAL & REPLACEMENT OF CONTROL PANEL

Should it be necessary to change the TX® Series Control Panel, use the following procedure:

1. Make sure the unit is dis-connected from its power source.
2. Remove screws from the front panel.
3. Remove back panel.
4. Remove the two exhaust hoses from the foam muffler, the large air line from the cylinder fitting, and the small air line from the compressor(Figures 1 and 2).
5. Dis-connect the Control Panel Power Plug (Figure 3).
6. Remove the Control Panel from the unit.
7. To re-install, reverse procedure.
8. Perform calibration procedure.

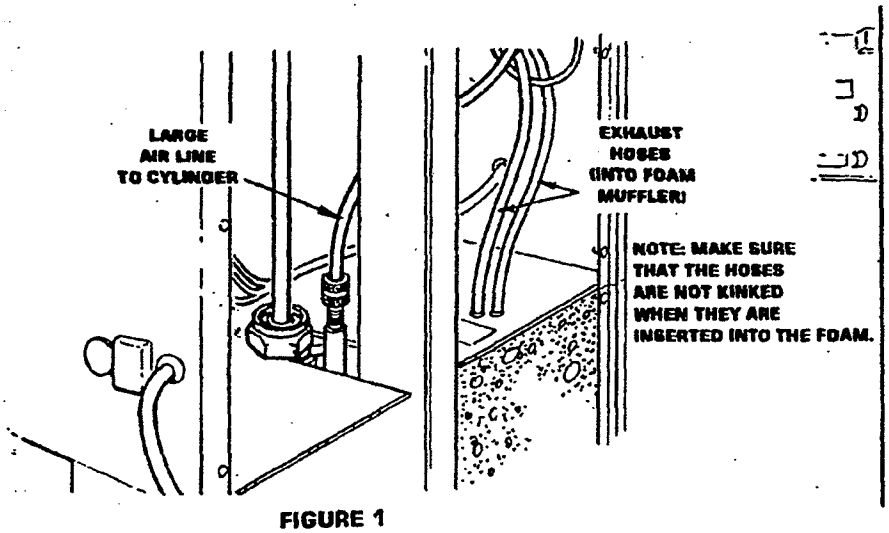

LARGE AIR LINE TO CYLINDER
EXHAUST HOSES (INTO FOAM MUFFLER)
NOTE: MAKE SURE THAT THE HOSES ARE NOT KINKED WHEN THEY ARE INSERTED INTO THE FOAM.

FIGURE 1

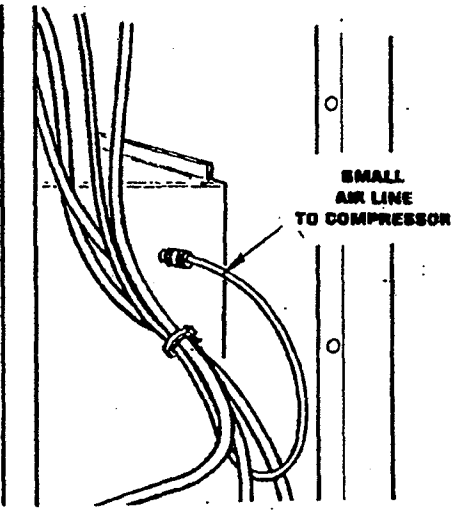


FIGURE 2

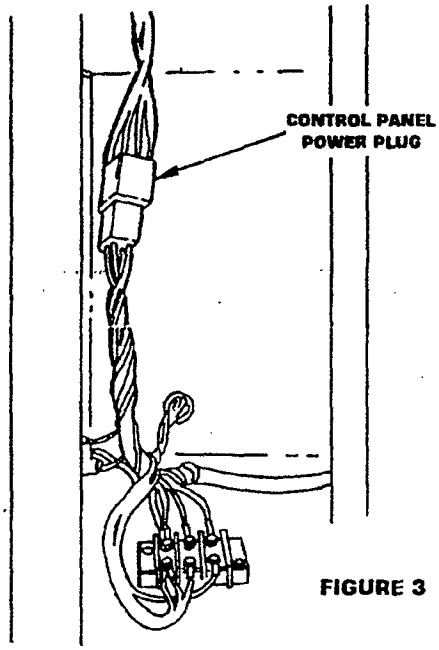
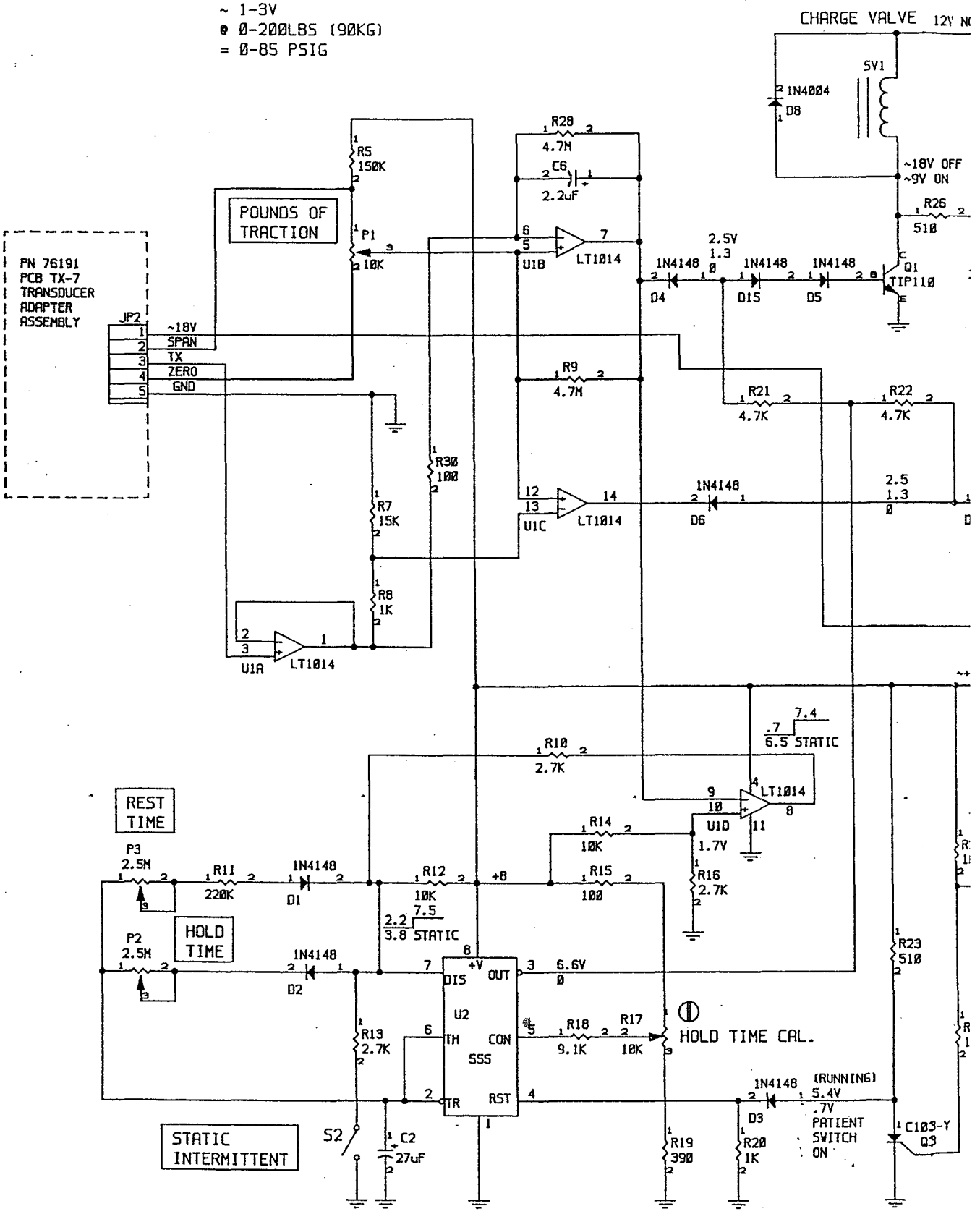
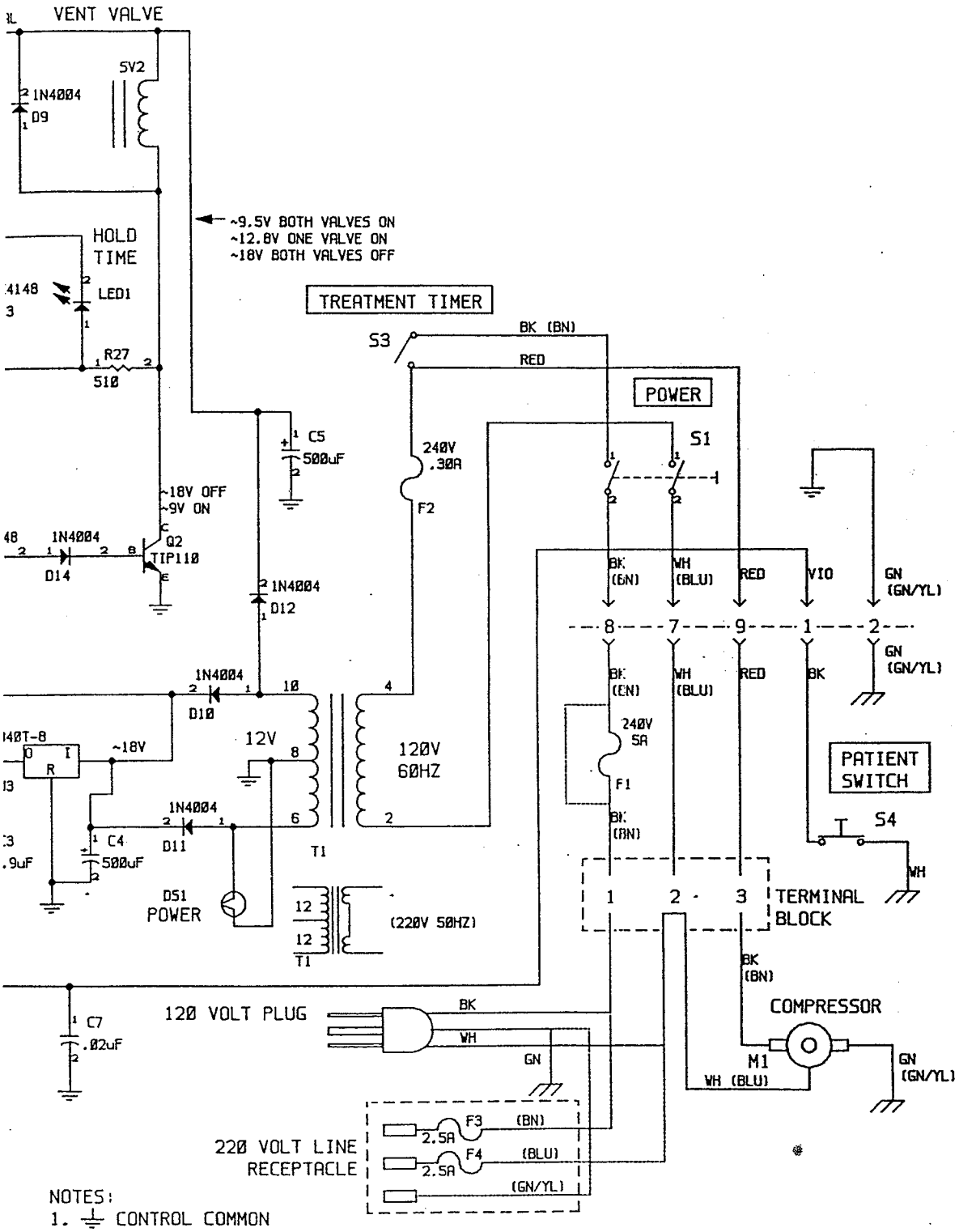


FIGURE 3


TRANSDUCER OUTPUT
~ 1-3V
@ 0-200LBS (90KG)
= 0-85 PSIG
CHARGE VALVE 12V NO
5V1
1N4004
D8
~18V OFF
~9V ON
R26
510
PN 76191
PCB TX-7
TRANSDUCER
ADAPTER
ASSEMBLY
JP2
~18V
SPAN
TX
ZERO
GND
POUNDS OF TRACTION
R5
150K
P1
10K
R28
4.7M
C6
2.2uF
U1B
LT1014
2.5V
1.3
0
1N4148
D4
D15
D5
Q1
TIP110
R9
4.7M
R21
4.7K
R22
4.7K
R30
100
R7
15K
R8
1K
U1C
LT1014
D6
2.5
1.3
0
U1A
LT1014
7.4
.7
6.5 STATIC
R10
2.7K
REST TIME
P3
2.5M
R11
220K
D1
R12
10K
2.2
3.8 STATIC
7.5
+8
R14
10K
R15
100
U1D
LT1014
1.7V
R16
2.7K
HOLD TIME
P2
2.5M
D2
U2
555
+V
OUT
DIS
TH
CON
TR
RST
6.6V
0
R13
2.7K
R18
9.1K
R17
10K
HOLD TIME CAL.
R23
510
(RUNNING)
5.4V
.7V
PATIENT
SWITCH
ON
D3
R20
1K
R19
390
C103-Y
Q3
STATIC
INTERMITTENT
S2
C2
27uF



NOTES:

1. ⏚ CONTROL COMMON
2. ⏚ CABINET GROUND
3. ⊕ SCREWDRIVER CAL. ADJUST
4. VOLTAGES MEASURED WITH DVM 1MEG. INPUT Z.
5. 220 VOLT WIRING IN DOTTED LINES AND 220 VOLT NOTES IN PARENTHESIS.

Electronic Schematic TX-7